

## In the Matter of Review of the Emergency Alert System

EB Docket No. 04-296

Notice of Proposed Rulemaking

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### Comments Concerning the FCC Review of the Emergency Alert System

#### **Introduction**

I very much appreciate the opportunity to comment on the need for an effective National emergency warning capability and the Emergency Alert System (EAS). I recently retired after 41 years of Federal Government service as an engineer and engineering manager. I served as the Chief of Dissemination Systems at the NOAA National Weather Service (NWS) for over 15 years. In that capacity I was responsible for the NOAA Weather Radio (NWR) and NOAA Weather Wire Service (NWWS) programs. I planned and hosted a National Dissemination Technology Conference in 1997, served on the White House Working Group on Natural Disaster Information Systems in 1997-1998, served on the National Partnership for Reinventing Government Working Group on All-Hazard Emergency Warnings in 1999-2000, and was a Founding Federal Liaison with the Partnership for Public Warning 2001-2003. I am submitting these comments as a private citizen having considerable knowledge of emergency warning systems.

Over the past few years there has been much rhetoric on the subject of emergency warning. We've repeatedly heard, and will probably hear in the comments submitted to the FCC during these proceedings, that "the U.S has no effective warning system, current systems over warn people not at risk and under warn those at risk, existing systems can't reach people in the middle of the night and wake them, emergency managers lack access to existing systems, technology is not a problem, and the needs of the disabled and non-English speaking communities are not being met." While there is some element of truth in some of these generalities, they are overly simplistic, tend to obscure the problem, and make identifying a solution more difficult.

For example, NWWS collects text emergency warning messages from sources anywhere in the United States and delivers them to anywhere in the United States in less than 10 seconds. NOAA NWS has agreements in place for emergency warning exchange with 50 States, the National Law Enforcement Telecommunications System, and the Department of Homeland Security. NWR broadcasts these emergency messages and other locally generated emergency warnings to those immediately at risk in the local area in less than a minute. Over 97% of Americans have access to NWR broadcasts using programmable Public Alert receivers. Low cost Public Alert (NWR) receivers can be programmed to alarm only for specific events in specific areas, are capable of waking even the deaf and hard of hearing, and are available at local Radio Shack and Target stores and on the Internet. EAS equipment can be automatically triggered from NWR broadcasts. Public Alert devices have multi-lingual user features and NWR has begun Spanish broadcasting.

NWR was credited with saving 140 lives during a tornado in Roanoke, Illinois on July 13, 2004.

Admittedly, these existing NOAA NWS systems don't work as well as they could or should. However, in spite of all the rhetoric, no other systems, existing or proposed, have been identified that can compete with the existing emergency warning capabilities of the NOAA National Weather Service. Technology is not a problem only if funding and system performance are not problems. From the cost perspective, the NWS infrastructure was paid for and is operated with public funds. The only viable "new technology" proposal for replacing existing NWS emergency warning dissemination capabilities was a satellite system with a price tag of \$250 million with annual operating costs of \$10 million. From the performance perspective, better integrated and upgraded NWS systems would markedly improve access to emergency management warning providers, make better delivery to other end-point dissemination technologies possible, increase reliability and operational availability, and allow dynamic network reconfiguration to better target and directly reach people in specific areas at risk.

The admittedly biased comments on NOAA NWS systems and EAS that follow are intended to broaden the dialogue on emergency warnings. The narrow focus on NWR and EAS has been detrimental to the overall process of improving emergency warning capabilities. A wider perspective is needed.

## **Executive Summary**

The Emergency Alert System (EAS) is conceptually and technically viable. The EAS business case is not. Interruptions to commercial paid broadcasts equate to revenue losses for the broadcaster. As such, a limited number of interruptions and revenue losses in the name of public service are acceptable, large numbers of interruptions are not. For example, from May 21 through May 24, 2004, the National Weather Service issued an average of 1083 emergency warnings a day. On May 30, they issued 1796. An EAS structure that translates each emergency warning into multiple interruptions to programming at hundreds of stations in an area during the severe weather season, with the potential for additional All-Hazard emergency messages for associated civil emergencies and other, non-related All-Hazard emergency messages, makes the business case for EAS untenable.

Proposals to limit activations to a more limited set of events and possibly compensate broadcasters for revenue losses would probably make EAS activations more palatable to broadcasters, just as making the current EAS activations voluntary did, but would seriously compromise EAS use as an effective primary emergency warning service. Although EAS could be made to work better and provide a useful service, it can never function effectively as the primary national warning system.

Emergency warning is a public safety issue that is generally recognized and accepted as a government function at local, state and Federal levels. Emergency warnings involve potential loss of life and property situations. As such, one has to think in the context of a Government enterprise not being subject to litigation for losses when warnings are not delivered early enough to allow action to mitigate damage. Liability issues preclude the private sector from accepting the responsibility for being the primary service provider for emergency warnings.

In the past ten years, thousands of hours have been spent on investigating how emergency warnings are currently delivered and identifying ways that the delivery could be made more effective. Reports have been written and recommendations made under the auspices of the Partnership for Public Warning (PPW), the Partnership for Re-Inventing Government, and the White House Office of Science and Technology Policy. Some improvements have been made, but efforts have been too narrowly focused on using new technology to deliver emergency warnings to those immediately at risk. The critical need, to effectively collect warning information from credible sources and deliver it to those who have the means to deliver warnings in multiple ways, has been largely ignored. The situation was further confused, by including emergency warning in the mix, during the rush of localities and states to spend the funding that DHS made available for improving emergency communications and interoperability. The services and systems being acquired may improve a local capability to disseminate locally generated information, but they do little to address the fundamental problems of (1) effectively collecting emergency warnings on natural and man-made disasters from a greater number of more widespread authenticated sources and (2) effectively delivering warning to those directly at risk in a timely manner.

Dealing with emergencies requires dedicated, trained people using dedicated resources and assets located in the area they are required to serve. Emergency warning is no different. Just as it would be ludicrous to have police, fire, and other emergency response personnel use public transportation to get to the scene of an emergency, communicate using the available public telephone system, and rely on available people on the scene to assist, it is unreasonable to base an emergency warning system on similar circumstance. Emergency warning requires a dedicated infrastructure with trained, knowledgeable personnel immediately available to respond to an emergency situation any time of the day or night. The only place where that currently exists on a National scale is the NOAA National Weather Service (NWS). Broadcasters, telephone companies, and other systems proposed as hosts for a national emergency warning system do not have those requisites.

Rather than trying to mold the EAS into something that it can never be, efforts should be directed to making the existing NOAA NWS infrastructure the backbone for a National Emergency Warning System (NEWS). Many more of the factors described by FCC Media Security and Reliability Council (MSRC) and the Partnership for Public Warning (PPW) as required in a national emergency warning system are inherent in NOAA NWS systems than in EAS, or for that matter any other system, available or proposed. EAS is currently, directly coupled to NOAA NWS through NOAA Weather Radio (NWR) and, in some cases, the NOAA Weather Wire Service (NWWS). The recent Memorandum of Agreement between NOAA and Federal Emergency Management Agency (FEMA) couples Department of Homeland Security (DHS) to NWS through the Disaster Management Interoperability System (DMIS). Strengthening the NOAA NWS infrastructure through improvements to NWR and NWWS would yield a much greater dividend than forcing EAS into a role it was never intended to play. Since the key players and infrastructure are currently in place in NOAA NWS and NOAA NWS has Congressional support for strengthening and enhancing warning dissemination, nothing would have to be done legislatively to implement this proposal, and it could be done utilizing funding that is currently available to DHS.

The NOAA NWS emergency warning mission currently extends much beyond weather and U.S. borders. An ongoing modernization of NOAA NWS has resulted in a national infrastructure of 122 secure offices staffed 24/7 by personnel trained to deal with emergency situations on a daily basis. These offices are interconnected by redundant state-of-the-art telecommunications and information technology, overlaid and supported by numerous other NOAA NWS warning and technology systems that provide interconnections with other domestic and international stakeholders in the All-Hazard emergency warning arena.

The proposed NEWS would be utilized by DHS with daily operations managed by the NOAA NWS and other partner organizations involved. The objective of NEWS would be to deliver emergency warnings directly to the public using currently established delivery mechanisms and to provide the private sector an opportunity to develop emergency warning delivery services based on existing and emerging technologies. DHS would establish a Federal Multi-Agency Working Group to set requirements and advise

/oversee operations. This Working Group would in turn use and support organizations such as FCC Media Security and Reliability Council (MSRC), the PPW and the Consumer Electronics Association (CEA) Public Alert Technology Alliance in roles as private sector advisors. DHS would fund necessary changes to NOAA NWS infrastructure, EAS, and FEMA's National Warning System (NAWAS) to better integrate them into the NEWS infrastructure and make them better conform to NEWS requirements. Parent organizations would continue to improve, fund and manage operations of their individual, mission critical components to support both their missions and their use as components of NEWS.

Plans for NEWS would include the following key components;

1. Timely, reliable, electronic access to all authorized local, regional, and National providers of emergency warning messages through secure interfaces to NOAA NWS infrastructure at all NOAA NWS facilities using the Organization for the Advancement of Structured Information Standards (OASIS) Common Alerting Protocol (CAP).
2. Upgrades to NOAA NWS infrastructure to integrate existing systems into a secure, satellite based network that would carry live voice, text, and digitized voice emergency messages for specific events from authorized providers to users as digital data streams. This would provide greatly improved delivery of emergency warnings addressed to those specifically at risk from sources anywhere in the U.S. to users anywhere in the U.S. at any time of the day or night.
3. Changes to the dedicated NWR network of 900+ stations to improve their performance, make them individually addressable from any location in the country, and provide public access to specific alarms in specific areas 24/7 through programmable CEA certified Public Alert devices currently on the market.
4. Changes to EAS and NAWAS to better integrate them into the fabric of NEWS, allowing them a potentially expanded role within the context of their current operations.
5. Establishing National emergency warning as a DHS mission mandate, establishing NEWS to support the DHS mission, and establishing a Multi-Agency Working Group to oversee NEWS operations and to coordinate with private sector advisory groups.

## **Specific Comments on EB Docket No. 04-296**

The following address the specifics of the NPRM:

### **I. Introduction**

I.1. EAS is not viable as the primary national emergency warning system. Although it can be made more useful as a local endpoint delivery system for emergency warnings, as a system, it lacks the structure and mechanisms necessary to effectively collect and deliver All-Hazard emergency warnings on a National scale 24/7.

I.2. No Comment

I.3. EAS infrastructure is privately owned and managed. There doesn't seem to be any way that state and local participation can be anything other than permissive.

I.4. With a few changes, EAS can transition to the digital world of broadcasting, but not as the primary means of delivering warnings. EAS is conceptually and technically viable, but economically and practically untenable, since program interruptions are lost revenue and disruptive to program content. Any operational model for EAS that is mandated would be unacceptable to broadcasters, as would direct takeover of the broadcast by local emergency management. Digital broadcasting, with the possibility of sub-channels or sub-carriers dedicated to emergency warnings, offers the possibility of a non-intrusive vehicle for EAS. But here again, communication capacity translates into revenue and lost capacity translates in lost revenue. A small amount is probably tolerable, but large amounts are probably not.

I.5. No Comment

### **II. Background – No Comment**

### **III. Discussion**

III.A.20. EAS as currently constituted is not an effective and efficient warning system. Although it has some potential value as an alternative, secondary means of delivering emergency warnings directly to the public, there are weaknesses in the EAS concept and implementation that make it unsuitable for use as a primary national emergency warning system. Broadcasters rarely activate EAS. They prefer conveying emergency warning information received from EAS and other sources such as NWR through their on-air news and weather personalities as a news event or by using a less intrusive on-screen crawl that does not interrupt programming.

III.A.21. In general, the PPW and MSRC reports do a fairly good job of describing the need for improved delivery of emergency warnings in the United States. However, they both fail to address the central issue in the emergency warning debate in sufficient depth.

This comes from internal biases in the two groups that precluded an in depth analysis of existing emergency warning issues and systems. The MSRC mission was focused on commercial broadcasting media security and how it might be better used to provide emergency warnings. PPW was never able to integrate Federal “partners” into its organization as voting members and was governed by private sector interests that viewed a Government operated national emergency warning system, specifically NOAA infrastructure and warning systems, as competition. Changes can be made to EAS to make it more useful and transition it to the digital world, but the fact that it is intrusive and disrupting to broadcasting makes it doubtful that EAS can ever be acceptable to commercial broadcasting.

III.B.22 Both MSRC and PPW arrived at similar conclusions regarding salient requirements for a national emergency warning capability, but both were too narrowly focused in their concentration on why existing warning systems weren’t meeting the public need. That narrow focus led to the conclusion that NOAA Weather Radio didn’t meet public needs and expectations as a national warning system and prevented them from recognizing and understanding that the NWS infrastructure, of which NWR is only a part, does meet those needs and expectations. NOAA NWS routinely collects and delivers event and area specific All-Hazard text emergency warnings from anywhere in the country to anywhere in the country in less than ten seconds – conversion to voice for NWR broadcast adds additional tens of seconds. Text messages are currently in English, but any approved source of non-English ASCII text warnings could also be delivered. NWR is broadcast in Spanish at several locations and development of a Spanish formatter for use network wide is in progress. Several Public Alert devices are multi-lingual. Public Alert devices are all capable of effectively warning people with disabilities. Just as the DHS uses the FCC EAS for National level warnings, NOAA NWS infrastructure could be effectively used by DHS for all other emergency warnings.

III.B.23 All the necessary components for implementing a National Emergency Warning System (NEWS) are currently available and operational, including the necessary interagency agreements. DHS has the statutory responsibility for public safety at the National level. NOAA NWS has the infrastructure to be the backbone of an effective NEWS. The FCC EAS brings commercial broadcasting into the picture. NOAA NWS’ partnership with the U.S. Department of Agriculture and its outreach effort to the deaf and hard of hearing communities address special needs for service to rural areas and the disabled. Partnerships currently exist through the Consumer Electronics Association, the Partnership for Public Warning, the National Association of Broadcasters, the National Emergency Managers Association, and hundreds of local, state, and regional organizations that are involved in everyday operations of the NWS, USDA, and FCC EAS. What are needed are a clear vision of what needs to be done and a plan describing how it can be cost effectively done in a short period of time. NOAA NWS has both and could be an agent for change under existing DHS/NOAA agreements..

III.B.24. Mandated use of commercial broadcast facilities for emergency broadcasts under EAS is simply not going to happen. The only authorized Government broadcasts

in this country are on NOAA Weather Radio. At best, EAS is only one of a number of ways of end point delivery of emergency messages. It is extremely unlikely that an effort for mandated government use of commercial broadcast facilities beyond what currently exists under EAS would be successful. Changes should be made to the EAS that will (1) change the outmoded architecture to improve its effectiveness, (2) eliminate the complexity required to manage direct access to EAS by local emergency managers by improving the security and means by which emergency messages are delivered to EAS for broadcast, (3) better support and train those emergency management organizations involved with a revamped EAS, and (4) expand NEWS/EAS emergency warning delivery to HDTV, digital radio, satellite radio and TV, and other regulated telecommunication services.

III.B.25. The need for detailed EAS plans and organizational structure to develop and implement the plans is driven by the perceived function of the EAS as the primary national emergency warning system for the United States. Since EAS has never lived up to that perception, and likely never will, its actual role as an endpoint provider significantly reduces the need for detailed, complex plans and associated state and local organizations to manage the EAS/Emergency Manager interface. The creation of a primary National Emergency Warning System that better addresses access needs of the emergency management community, coupled with a more effective, universal interface between NEWS and EAS, would eliminate the problems that currently require detailed EAS Plans and LECCs and SECCs.

III.B.26. There should be a plan for utilization of EAS as part of an overarching National Emergency Warning System (NEWS). Assuming a NEWS utilizing NOAA NWS infrastructure as a communications backbone, emergency manager access to NEWS would be through a variety of secure interfaces, i.e., the DHS/FEMA Disaster Management Interoperability System (DMIS), interfaces at NOAA NWS Weather Forecast Offices, or NOAA Weather Wire Service (NWWS) satellite terminals. NEWS would provide all emergency messages to EAS using the existing EAS/NWR broadcast interface and procedures. This would eliminate the burden and workload currently placed on broadcasters for authentication, source verification, and security imposed by existing and proposed direct access arrangements. It would also simultaneously provide an avenue to eliminate the current, oft cited problem of local emergency managers getting access to unattended local broadcast stations for a local emergency.

III.C.27. Given a NEWS based on **existing** NOAA NWS infrastructure, an emergency text message from an approved source delivered to any of the 122 NWS Weather Forecast Offices in the country could be delivered via the satellite based NOAA Weather Wire Service (NWWS) to any location in the United States (including Alaska, Hawaii, and Puerto Rico) in ten seconds. **Existing** EAS equipment at cable head ends and TV broadcast facilities could extract those warnings for their service areas and immediately rebroadcast them as a text crawl on all channels. That same text based message would be simultaneously ingested into the **existing** NWR system at appropriate local WFOs and within seconds be broadcast as audio with Specific Area Message Encoding (SAME) by local NWR stations. The current 97% population coverage of NWR virtually assures



selective access to these audio warning messages using existing SAME/EAS codes by virtually all radio and TV stations in the country using existing EAS equipment. Redefining the current EAS hierarchical structure would improve delivery using the EAS infrastructure by providing additional alternative redundant routing.

III.C.28. All EAS equipment should be upgraded to respond to the new code structure. The upgrade should be Government supported and take no longer than one year.

III.D.29. As a component of a National Emergency Warning System, EAS capability should be required on all telecommunications media regulated by the FCC. The exact mechanism (sub-carrier, sub-channel, dedicated channel, etc.) by which this is accomplished should not be mandated, but left to the individual service providers. The use of the Common Alerting Protocol (CAP) should be required to deliver the emergency messages in both voice and text formats. The existing EAS event and location codes structure is sufficient for delivery at sub-county and sub-city areas. More specific area delivery can be left to private sector emergency warning system designers and service providers using location information embedded in each message. The private sector equipment manufacturers, using, for example, the Consumer Electronics Standard CEA-2009 for Public Alert devices, can best address questions of how the emergency messages are delivered to the viewer or listener. What the FCC and other Government partners must do is establish a NEWS backbone that can collect and deliver authenticated emergency warnings to the telecommunication media in a timely, reliable manner using CAP.

III.D.30. Questions of what mechanism is best suited for delivery of emergency messages using a particular media are best left to those in the private sector who own and operate these systems and who design and build consumer products. The CAP and Public Alert Standards are excellent examples of successful models of this process. The unavailability of any consumer grade emergency warning devices activated by EAS in the marketplace also speaks volumes in this regard.

III.E.31. There is nothing that can be done to EAS to improve penetration of commercial, private sector broadcasting. However, penetration to the public can be increased by establishing a NEWS that can deliver timely, standardized emergency messages to all EAS capable media, such that the public will have multiple sources of emergency warning information available everywhere, all the time.

III.E.32. There is nothing wrong with the EAS concept of delivering emergency information using public regulated media. It just needs to be expanded to require EAS capability in all media and let the marketplace decide which are successful. An enhanced EAS and the National emergency warning capability inherent in NOAA NWS infrastructure need to be more closely coupled into a National Emergency Warning System (NEWS). For the most part, nearly all the other available proposed systems (Reverse 911, Internet, cellular phones, pagers, etc.) are end point delivery systems that rely on NWS infrastructure (and sometimes EAS) for their information. A NEWS, operated under the auspices of DHS, could provide a vastly improved collection and

distribution system for emergency information that would benefit directly and through new and improved secondary end point delivery systems.

III.E.33. CAP should be established as a standard format for emergency messages. (CAP is more a format than a protocol in the sense of defined communications protocols such as ISO). Implementing CAP on a NEWS platform, whose backbone is an enhanced NOAA NWS infrastructure, would establish commonality among all stakeholders. It would enable and simplify the collection, processing and delivery of emergency messages.

III.E.34. Everything that MSRC recommends would be available with a CAP based NEWS built on an enhanced NOAA NWS infrastructure. A partnership between NOAA and the USDA, that addresses rural emergency warning issues, has been in place for several years and has extended emergency warning coverage to nearly 100 previously underserved areas (over 500,000 square miles) in the last 3 years. Efforts continue to extend NWR coverage in those remaining areas where it is marginal.

III.E.35. The functionalities described in the MSRC report and described in the CEA-2009 standard are absolutely essential to effective emergency warning and should be incorporated into any consumer devices intended to carry emergency warnings. If the Government puts an effective NEWS system in place that can be used for multimedia delivery of warnings, mandates would not be necessary.

III.F.36 - 39. NOAA NWS and those manufacturers supplying Public Alert/NOAA Weather Radio based emergency warning systems have successfully addressed the problem of warning people with disabilities. The level of warning capability supplied by NOAA NWS through certified Public Alert devices is adequate for the vast majority of people with disabilities. This has been made possible by the incorporation of Specific Area Message Encoding (SAME) on all NWR broadcasts. SAME allows the NWR receiver to be programmed by listeners to alarm for only events they consider to be a threat to them and only events in their locale. The receiver is mute for all other events and locales, only alarming for selected events and locations. Emergency messages are timely, being processed and broadcast within seconds of the event forecast. People with sight impairments can be awakened by an audible alarm and listen to a broadcast that includes emergency situation details and recommended action. The 25 to 28 million deaf and hard of hearing people in the United States can currently be awakened by bed and pillow shakers and high intensity strobe lights activated by Public Alert devices. Public Alert devices allow them to immediately view basic information such as event type, event immediacy, and duration through front panel screen and indicators lights. This information, coupled with a previously established emergency action plan, can allow those with a hearing disability to seek a pre-established safer location and provide them time to seek additional information from local TV broadcasts, from friends via a TTY, from the Internet or Email. In the future, recently demonstrated text broadcast on NWR would offer the deaf and hard of hearing immediate access to the same information contained in the audio broadcast. Timely warnings delivered by NWR can allow caregivers time to implement an emergency action plan and those with mobility

impairments additional time to move to a safer location. Additional protection is even afforded those with learning disabilities, who can be taught to respond to relatively simple Public Alert device basic alarms.

III.F.40. Another advantage of a NEWS based on NOAA NWS infrastructure is that NOAA Weather Radio, Weatherradio in Canada, and Public Alert are currently addressing foreign language capability issues for warning delivery. NOAA NWS currently operates several dedicated Spanish language NWR stations and efforts are in progress to develop program formatters to allow dual language broadcasts in all areas with large Hispanic populations. Canadian Weatherradio has adopted NWR SAME and broadcasts in English and French. Multi-language text displays are incorporated into Public Alert devices, Spanish being required in the United States and French being required in Canada.

III.G.41. Security in the collection and delivery of emergency messages would be greatly enhanced with a NEWS built on an NOAA NWS infrastructure backbone. From the physical standpoint, NWS infrastructure is housed at secure, fenced, gated, limited access facilities. The infrastructure is distributed over the entire United States. Facilities are interconnected, backed up with several intermeshed private and public telecommunications networks and have their own emergency power systems. Procedures for service backup, should any office suffered a catastrophic failure, are in place. A new architecture has been proposed and demonstrated that would make the entire NWS infrastructure a National, wireless, mesh network, with all nodes (including NWR stations, Weather Forecast Offices, and Federal, State, and Local Emergency Management facilities) IP addressable. This would result in the system being able to collect emergency warnings through secure interfaces from authenticated sources anywhere, with targeted delivery to anywhere as voice or text, all the time, in less than 30 seconds.

III.G.42. Location of NWS/EAS equipment would be dictated by the needs and means of the system operator, where individual nodes were in the warning hierarchy architecture, how a national warning system is implemented, and the structure of endpoint delivery systems. Currently in the NOAA NWS and EAS infrastructure and protocols, threat identification and location information are embedded in the message structure. Depending on the design of the endpoint delivery system, the embedded information could be delivered directly to a programmable user device or parsed, analyzed and delivered to a selected subset of user devices. Coupled to GPS, these devices could know their precise location and react to only those threats in a more narrowly defined area.

III.G.43. Periodic system testing is absolutely essential. Unfortunately, unless EAS friendly consumer electronics, akin to Public Alert devices, are introduced into the marketplace, the problem, i.e., balancing the number of intrusive test events with the need for testing, will continue.

III.G.44. If strictly voluntary use of the EAS continues, EAS management could be much simplified by making activation of EAS a function of a NEWS. Instead of local

emergency managers directly requesting EAS activation, CAP formatted authenticated emergency warnings from approved providers would be transmitted electronically to NEWS and delivered simultaneously to EAS, NWS disseminations systems, and any other available endpoint delivery systems for immediate delivery to those at risk. Universal national guidelines and procedures for EAS activation would result in simplified activation processes at individual broadcast stations with less need for state and local organizations and involvement. This would significantly simplify system management and simplify the training needed for all participants.

III.G.45. Based on a premise of EAS remaining as voluntary for anything other than a National level warning and simplifying changes to the architecture and structure of EAS, costs should remain stable. Requiring all regulated services to participate without regard to size should not impose an unfair burden on small operations.

III.G.46. Enforcement - No Comment

III.G.47. Miscellaneous Issues - Significant effort has been expended in defining the specifics of how warning messages should be prepared, what they should contain, human factor issues, etc. Very little has been done to definitively describe the emergency warning concept in basic, simple terms and to implement that concept using existing Government assets.

The fundamental purpose of an emergency warning system is to take information, about an expected or in-progress, life threatening event, from an authoritative source and deliver it so that timely action can be taken to reduce the risk of death, injury and property loss. Threats to the safety of individuals are nearly always a function of their location. Robust systems that can deliver emergency warnings to a specific area immediately at risk and adjacent areas potentially at risk are required. Warnings have to be delivered to everyone in a given area or volume of space who is at risk from a static event within that area or from a moving event that will impact adjacent areas. On the most fundamental technical level, an emergency warning system is a communications system with sensors or mechanisms for detecting and quantifying a threat and delivering that information to end-point systems that convey the information directly to those in the threatened area. That model, for example, accurately depicts simple scenarios like the signals from sensors in your fingers that keep you from touching something hot. It also applies to more complex scenarios such as a home security system that is triggered by a smoke/fire detector or intrusion alarm that notifies you and the authorities concerned with your safety that you are at risk. A National level emergency warning system would allow a local first responder to have local residents shelter in place for a toxic chemical fire, allow state authorities to order widespread evacuations for a hurricane, or allow National authorities to warn of terrorist activities.

Much of the rhetoric and effort in emergency warning arena over the past several years has been focused on the end point delivery of warnings. This has worked to the detriment of the identification and development of more effective core elements needed to collect emergency information from authorized sources and quickly deliver it directly

to those at risk through the many available and proposed end point delivery systems. The intense debate and competition for funding made available by the Department of Homeland Security to resolve first responder interoperability issues, the commingling of these issues with emergency warning issues, the ongoing focus and debate among proponents of the Emergency Alert System and NOAA Weather Radio and proponents of “new technology” endpoint emergency warning delivery systems, such as cellular phones and Internet services, has further confused the entire emergency warning system debate.

#### **IV. Conclusion**

The critical issue, that is currently not being adequately addressed, is identifying those core elements that are necessary to implement an effective national emergency warning system that can (1) collect emergency information from all authorized sources anywhere in the country and (2) supply that information directly to the public and to existing and proposed endpoint delivery systems in a secure and timely manner anywhere in the country. The simple fact of the matter is that after thousands of hours of studying this problem, three groups of experts were not able to identify any currently operational systems or networks, other than the NOAA NWS infrastructure, that were capable, on a national scale, of effectively collecting and disseminating emergency warnings directly to public at risk or to existing end point provider systems.

NOAA NWS infrastructure - 122 offices staffed 24/7 by people trained, experienced, and dedicated to effectively deal with emergency situations, using state-of-the-art telecommunications and information technologies – has a long, documented history of saving lives in fulfilling the NOAA NWS mission. The fact that this infrastructure exists, is operational, is highly effective, and is already paid for by the taxpayers, combined with the fact that it would cost \$250 million to replicate it, is a strong and difficult to counter argument for using NOAA NWS infrastructure as the backbone for a National Emergency Warning System.

With a relatively small amount of funding for modifications to some existing NWS telecommunications and IT systems, the existing NOAA NWS emergency warning infrastructure could be transformed into a more accessible, robust, secure, ubiquitous National Emergency Warning System in the next two years, without significantly impacting current NOAA NWS operations.